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Abstract

Introduction: Children in families where there is substance misuse are at high risk of being removed from their parents' care. This study describes the characteristics of a community sample of parents who primarily smoke methamphetamine and their child/ren's residential status.

Design and methods: Baseline data from a prospective study of methamphetamine smokers ('VMAX'). Participants were recruited via convenience, respondent-driven and snowball sampling.

Univariable and multivariable logistic regression analyses were used to estimate associations between parental status; fathers' or mothers' socio-demographic, psychosocial, mental health, alcohol, methamphetamine use dependence, alcohol use and child/ren's co-residential status.

Results: Of the 744 participants, 394 (53%) reported being parents. 76% (88% of fathers, 57% of mothers) reported no co-resident children. Compared to parents without co-resident children, fathers and mothers with co-resident children were more likely to have a higher income. Fathers with co-resident children were more likely to be partnered and not have experienced violence in the previous six months. Mothers with co-resident children were less likely to have been homeless recently or to have accessed treatment for methamphetamine use.

Discussion: The prevalence of non-co-resident children was much higher than previously reported in studies of parents who use methamphetamine; irrespective of whether in/out of treatment. There is a need for accessible support and services for parents who use methamphetamine; irrespective of their child/ren's co-residency status.

Conclusions: Research is needed to determine the longitudinal impact of methamphetamine use on parents' and children's wellbeing and to identify how parents with co-resident children (particularly mothers) can be supported.

Keywords: father/mother, substance misuse, VMAX

Introduction

Children in families where there is substance misuse are at high risk of poor developmental outcomes and being placed in out of home care [1, 2]. Most of this research has focused on the impact of parents' alcohol misuse on children [3]. Longitudinal studies have shown that parents'/grandparents' dependency on illicit drugs is positively associated with children's substance use and poor psycho-social outcomes [4]. There is a growing body of evidence about the effect of parents' use of methamphetamine on child outcomes. Prenatal methamphetamine exposure has been associated with children's externalising behavioural problems at 5 years [5]. Parents in treatment for methamphetamine use report their children are at high risk of behavioural problems [6, 7].

Parents who use methamphetamine are less likely have co-resident children than parents who use other substances [8, 9]. Reports of children aged <18 years co-residing with parents who use methamphetamine vary according to the age and number of children and range from 68% in a community setting to 87.5% for those in treatment [8, 10]. In Australia, amongst those in treatment for methamphetamine use, mothers are more likely than fathers to have co-resident children [8]. Crucially, compared to parents who use other substances, those who use methamphetamine are more likely to have attempted suicide, experienced depression, nightmares and flashbacks [8], have high levels of parenting and psychological distress [5, 10, 11] and have children with behavioural problems [5, 10].

No published studies were found that examined the characteristics of Australian parents who primarily smoke methamphetamine and the co-residency status of their children. Two Australian longitudinal studies of consumers who use methamphetamine via any route of administration found being a parent was not independently associated with accessing professional support, reduced methamphetamine use or abstinence [12, 13]. Instead, parents' service utilisation was associated with co-morbidity (e.g. mental health) and increased risk of methamphetamine-related harms [12].

Little is known about how to support parents who primarily smoke methamphetamine and are not seeking treatment. To assess the needs and risks in these families, we need to understand their characteristics and living circumstances. The aim of this study was to quantify and describe the socio-demographic, psychosocial, mental health, alcohol and methamphetamine use characteristics of parents, in a cohort of participants who primarily smoke methamphetamine. We specifically

examined whether these characteristics differed by parental status, gender or residential status of child/ren.

Method

Study design and sampling

Data come from baseline surveys administered to a community-based prospective sample of consumers who primarily smoked methamphetamine (the 'VMAX Study'). The cohort was recruited via a combination of convenience, respondent-driven [14] and snowball sampling methods. Eligible participants included those who: were aged ≥ 18 years; primarily smoked and used methamphetamine at least monthly in the previous six months; and, lived in metropolitan or rural Victoria. Methamphetamine dependence was assessed using the Severity of Dependence Scale (SDS); a score of ≥ 4 is indicative of methamphetamine dependence [15]. The Patient Health Questionnaire (PHQ-9) and the Generalised Anxiety Disorder (GAD-7) instruments were used to measure depression and anxiety [16], and the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) measured harmful alcohol use [17]. Data were collected via face-to-face interviews and entered directly into a mobile device using REDCap software [18].

Statistical analyses

Variables with a significant association ($p < 0.05$) in univariable analysis were entered into multivariable logistic regression analyses to estimate associations between (1) participants' parental status (no children, children); (2) fathers' or (3) mothers' child/ren's co-residential status (at least 1 co-resident child, no co-resident children) and socio-demographic, psychosocial, mental health, methamphetamine dependence and harmful alcohol use. For the univariable and multivariable analyses, reported results are odds (adjusted) ratios, 95% confidence intervals and probability-value levels. Univariate analyses excluded missing cases for each independent variable. Adjusted multivariable logistic regression analyses used a complete case approach for missing data ($n=1$). All statistical analyses were undertaken using SPSS statistical software package [19].

Ethics

The study was approved by the Alfred Hospital and Monash University Human Research Ethics Committees. Written informed consent was obtained prior to enrolment in the study. Consistent with best practice in alcohol and other drug-related research, participants were reimbursed \$40 [20].

Results

Of the 744 participants, 394 (53%) were parents. In multivariable Model 1 (Table 1), participants were significantly more likely to be parents if they were older, female, lived outside a major city, identified as Aboriginal/Torres Strait Islander, were in a married/defacto relationship, had a Year 10 education or less, had suffered physical violence in the last six months, or did not have an alcohol use disorder. Of the 394 parents, 297 (76%) had no co-resident children.

Only 12% (28/233) of fathers had at least one co-resident child. In multivariable Model 2, fathers who were in a married/defacto relationship, had a weekly income above \$399, and had not experienced violence in the previous six months, were significantly more likely to have at least one co-resident child.

Close to half (43%, 69/160) of mothers had at least one co-resident child. In multivariable Model 3, mothers who had a weekly income above \$399, had not been homeless in the last 12 months, and had not utilised professional support for the methamphetamine use in the last 12 months, were significantly more likely to have at least one co-resident child.

Table 1: Three multivariable logistic regression models showing associations with (1) parental status (no children, children); child/ren residential status (2) fathers; and (3) mothers, (at least 1 co-resident child, no co-resident children); odds ratio (OR) and adjusted odds ratio (aOR) with 95% confidence intervals (CIs).

	Model 1: Parental status						Child/ren residential status											
	n	% parent	OR	95% CI	aOR†#	95% CI	n	% >1 co-resident children	OR	95% CI	aOR†	95% CI	n	% >1 co-resident children	OR	95% CI	aOR†	95% CI
Characteristics	53.0		n=744		n=738		12.0		n=233		n=231		43.1		n=160		n=159	
Age in years (mean) ^(a)	743	(34.1)	1.11***	1.08, 1.13	1.12***	1.10, 1.15	233	(39.1)	1.01	0.97, 1.06			160	(35.6)	1.01	0.97, 1.05		
Gender ^(b)																		
Males	453	51.4	1		1													
Females	288	55.6	1.18	0.88, 1.59	1.66*	1.12, 2.46												
Geographical Area (Modified Monash Model) ^(c)																		
1 (major city)	266	23.7	1		1		41	9.8	1				21	52.4	1			
2-5 (other)	478	69.2	7.26***	5.15, 10.22	5.47***	3.60, 8.33	192	12.5	1.32	0.43, 4.04			139	41.7	0.65	0.26, 1.63		
Aboriginal/Torres Strait Islander ^(d)																		
No	645	49.8	1		1		193	13.0	1				127	44.1	1			
Yes	98	73.5	2.80***	1.74, 4.49	2.09*	1.17, 3.73	39	7.7	0.56	0.16, 1.96			33	39.4	0.82	0.38, 1.80		
Relationship																		
Married/de facto	135	68.9	1		1		52	32.7	1		1		40	45.0	1			
Single/other	609	49.4	0.44***	0.30, 0.66	0.60*	0.37, 0.97	181	6.1	0.13***	0.06, 0.31	0.11***	0.05, 0.28	120	42.5	0.9	0.44, 1.86		
Secondary education																		
≥ Year 11	345	38.8	1		1		71	9.9	1				62	43.5	1			
< Year 11	399	65.2	2.95***	2.19, 3.97	1.88***	1.28, 2.74	162	13.0	1.36	0.55, 3.37			98	42.9	0.97	0.51, 1.85		
Employed																		
Yes	166	30.1	1		1		34	20.6	1				15	66.7	1			
No	578	59.5	3.41***	2.35, 4.94	1.34	0.83, 2.17	199	10.6	0.46	0.18, 1.17			145	40.7	0.34	0.11, 1.06		

Weekly income ^(e)																	
≤ \$399	380	52.9	1					132	7.6	1		1		69	26.1	1	1
> \$399	358	53.1	1.01	0.75, 1.35				99	18.2	2.71*	1.19, 6.17	3.61**	1.44, 9.06	90	56.7	3.71***	1.88, 7.31 3.18*** 1.56, 6.49
Homeless last 12 mths ^(f)																	
No	470	48.3	1		1			125	13.6	1				101	52.5	1	1
Yes	274	60.9	1.67***	1.23, 2.26	1.19	0.80, 1.76		108	10.2	0.72	0.32, 1.61			59	27.1	0.34**	0.17, 0.68 0.42* 0.20, 0.88
Violence last 6 mths ^(g)																	
No	519	49.9	1		1			164	15.2	1		1		94	46.8	1	
Yes	224	60.3	1.52**	1.11, 2.09	1.87**	1.23, 2.83		69	4.3	0.25*	0.07, 0.87	0.26*	0.07, 0.95	66	37.9	0.69	0.37, 1.32
MA dependence (SDS) ^(h)																	
< 4	258	46.1	1		1			77	9.1	1				41	41.5	1	
≥ 4	486	56.6	1.52**	1.12, 2.06	1.58*	1.05, 2.37		156	13.5	1.56	0.63, 3.84			119	43.7	1.1	0.53, 2.25
Alcohol use disorder (AUDIT-C) ⁽ⁱ⁾																	
No	323	62.5	1		1			112	11.6	1				89	44.9	1	
Yes	421	45.6	0.50***	0.37, 0.68	0.62*	0.43, 0.90		121	12.4	1.08	0.49, 2.38			71	40.8	0.85	0.45, 1.59
Anxiety (GAD-7) ^(j)																	
Minimal / mild anxiety	404	51.5	1					134	11.2	1				73	41.1	1	
Moderate/severe anxiety	340	54.7	1.14	0.85, 1.52				99	13.1	1.2	0.54, 2.65			87	44.8	1.17	0.62, 2.19
Depression (PHQ-9) ^(k)																	
Minimal / mild depression	370	54.9	1					128	11.7	1				74	43.2	1	
Moderate/severe depression	374	51.1	0.86	0.64, 1.15				105	12.4	1.06	0.48, 2.35			86	43.0	0.99	0.53, 1.86
Used AOD services for MA ^(l)																	
No	436	50.2	1					130	11.5	1				88	53.4	1	1
Yes	308	56.8	1.30	0.97, 1.75				103	12.6	1.11	0.50, 2.45			72	30.6	0.38**	0.20, 0.74 0.39** 0.20, 0.79

† complete case approach; parent model #adjusted for sex; *p*-value, *0.05, **0.01, ***0.001

- a) Missing data for 1 participant (missing date of birth)
- b) Missing data for 3 participants (2 identified as non-binary, 1 refused)
- c) Modified Monash Model geographical classification system of metropolitan, regional, rural and remote areas in Australia (<https://www.health.gov.au/health-workforce/health-workforce-classifications/modified-monash-model>)
- d) Missing data for 1 participant ('don't know')
- e) Missing data for 6 participants (2 'don't know, 4 'not applicable')
- f) At least one period of homelessness in last 12 months.
- g) Experienced any kind of physical violence in last 6 months; Missing data for 1 participant (refused)

- h) SDS - severity of dependence scale where ≥ 4 classified as methamphetamine dependent
- i) AUDIT-C alcohol screen where males ≥ 4 , females ≥ 3 classified as alcohol use disorder
- j) GAD-7 Generalised Anxiety Disorder scale
- k) PHQ-9 Patient Health Questionnaire depression scale
- l) Ever utilised alcohol-and-other-drug services for methamphetamine use: individual/group drug counselling, residential/outpatient detoxification, residential rehabilitation. Excludes pharmacotherapy.

Discussion

Our study is one of few to examine characteristics and child/ren residential status of a community-based sample of parents who primarily smoke methamphetamine. Participants who were parents were more likely to report disadvantage and harm. Seventy-six percent of parents (88% of fathers and 57% of mothers) had *no* co-resident children; that is, all their children lived elsewhere. When compared to the findings of studies where child co-residency is based on *one or more* non-co-resident children, these results are concerning. An Australian residential treatment data study of child/ren co-residency reported the proportion of parents with at least one child who is not co-resident (i.e. not *all* children) at 83–88% [8]. Similarly, 68% of parents in a US community-based study reported having at least one non-co-resident child [10].

We found mothers who had non-co-resident children were more likely to access treatment for their methamphetamine than those who resided with children. This is consistent with previous studies of parents who use or access treatment for methamphetamine; they are less likely to have co-resident children [8, 9, 12]. This finding was the same for both having ever or recently (past year) accessed treatment for methamphetamine use. In light of previous research [21], it could be that mothers who access treatment may, in part, do so to be reunified with their children. Conversely, mothers who have co-resident children may perceive they have less ‘need’ for services, or be concerned about losing custody of their children if they seek services [21, 22]. Compared to other children, those whose parents misuse any substances are at increased risk of poorer academic, behavioural, emotional and social outcomes [2]. However, women who use methamphetamine and access services face the stigma being a mother who uses methamphetamine [23] and little is known about the role of treatment services in preventing child custody loss [24]. Further research is needed to determine how mothers who use methamphetamine and have co-resident children can be supported to seek services whilst ensuring the wellbeing of their child/ren.

In our study, depression and anxiety scores were not significantly different between those with/out children, nor between parents with/out co-resident children, but are very high compared to those reported in the 2017–18 Australian health survey for the general Australian population [25]. This highlights the importance of mental health support and comprehensive primary health care services for parents who use methamphetamine, and for their children.

There were limitations to the study. We did not ascertain the age of children. This may, in part, explain our findings. To account for this, we compared the sample by parent- and child-resident status with estimates from an age- and sex-adjusted representative sample of the Australian population [26] and estimated that more than 90% of parents in our study would have at least one child under the age of 18 years. Parents who

use methamphetamine were as likely to have children, but were far less likely to have co-resident children; 12% compared to 75% of the general Australian population of the same age and gender. The data is cross-sectional so causality cannot be inferred. The sample was not representative sample; therefore, the generalisability of findings may be limited. Self-reported data are subject to recall and social desirability biases. The number of fathers with co-resident children was relatively small (n=28) and so limited the estimation of smaller but nonetheless clinically meaningful effects.

Follow-up with this prospective cohort will afford opportunities to explore the age, sex and ongoing residential status of participants' children. In the context of parents' substance use, data linkage over a five-year period will provide additional insights into parents' service utilisation.

Conclusion

Study findings provided new information regarding the high number of non-co-resident children and the need for accessible support and services for parents who use methamphetamine. Further research is needed to identify optimal ways of supporting these families.

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